

**A subspecies of *Spisula elliptica* (Brown) in  
southern Europe, *Spisula elliptica*  
*gracilis* (Locard)**

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When revising material from the Ría de Arosa, Galicia, Spain, collected by the Rijksmuseum van Natuurlijke Historie, Leiden, Holland, Cadée (1968: 73, footnote) submitted *Spisula* samples to me, which I could not assign to any one of the known species. Since there are three species of the genus in Europe, *S. solida* (L.), *S. elliptica* (Brown), and *S. subtruncata* (Da C.), separated one from the other by good and constant characters, the material seemed well worth a closer examination.

The specimens closely approach *S. elliptica*, but differ from it by their grooved dorsal areas left and right of the umbo. Now the presence or absence of such a groove pattern is an essential feature in *Spisula*. *S. solida* and *S. subtruncata* are both grooved and the smooth dorsal areas of *S. elliptica* almost immediately distinguish it from those two species. The character so far known is of an absolute value and intermediates — species either with or without, or species with more or less developed groove-pattern — are not known so far.

The Ría material does not show any other essential differences with typical *S. elliptica*, though its variation is somewhat different. The specimens partly tend to be slightly inequilateral, either the posterior or anterior end being a trifle longer. On an average the umbo is somewhat more pronounced and angular, the shells thus reminding one of almost symmetrical *S. subtruncata*: the difference, however, is not great, and in subfossil material from Holland similar specimens may be found. Final-

ly the posterior dorsal margin is usually a bit more sharply curved than the anterior one, in contrast to typical material where both margins are evenly curved.

These three features in combination may give the shells a slightly irregular appearance, so that at first I wondered, whether I had to do with an equilateral form of *S. subtruncata*. They are distinguished, however, from *S. subtruncata* and from *S. solida*, both well represented in the Ría material, by their essential characters (cf. Van Urk, 1957, 1959, 1964). The slightly different variation is in fact too small to be considered in terms of systematical rank. Apart from this, there is the normal *Spisula* variation in length-breadth ratio.

Young specimens of about 3-7 mm hardly show any grooves on the dorsal areas, if at all; the grooves only begin to develop at a shell size of about 5-7 mm. *S. solida* shells of about 5 mm already show a few well-marked grooves near the dorsal margins and in *S. subtruncata* the grooves are present except in the smallest stages. There is also variation in the grooves, which generally are less pronounced and regular than in *S. solida* and *S. subtruncata*.

Since the presence or absence of a groove-pattern is such an important taxonomical character in the genus *Spisula*, and is apparently correlated here with the geographical distribution, there seems good reason to consider the material from the Ría de Arosa as a subspecies of *S. elliptica*.

Until recently, *S. elliptica* itself has seldom properly been distinguished from *S. solida*, but a name for the special form can be found in the literature, Locard (1890) mentions a *S. gracilis* and gives a figure, that could have been drawn after the material from the Ría de Arosa; his description on the other hand does not give any essential information.

Material from the Locard collection in the Muséum National d'Histoire Naturelle, Paris, was kindly sent to me via Dr. J.M. Gaillard by Miss A.-M. Testud. The specimens agree in detail with the material from the Ría de Arosa, both as regards the grooved dorsal areas and the general variation. The specimen from Belle-Isle, figured by Locard, is also present. It contains the correct label and the right valve bears on the inside the inscription in ink: "I fig. 1 *M. gracilis*". Presumably this valve has been shown in mirror image since the illustration would be that of a left valve.

Though the specimen measures 2.4 cm in breadth, the grooves on the dorsal areas are rather poorly developed. In fact Locard mentions a groove pattern in *Mactra subtruncata* and *triangula* but not in *Mactra gracilis*. His description could be well applied to typical *S. elliptica* and for this reason a more precise definition may be given.

*Spisula elliptica gracilis* (Locard, 1890)

Differs from *Spisula elliptica* by its grooved dorsal areas; the grooves develop at a shell size of about 5-7 mm, but usually form a less pronounced and less regular pattern than in *Spisula solida* and *S. subtruncata*.

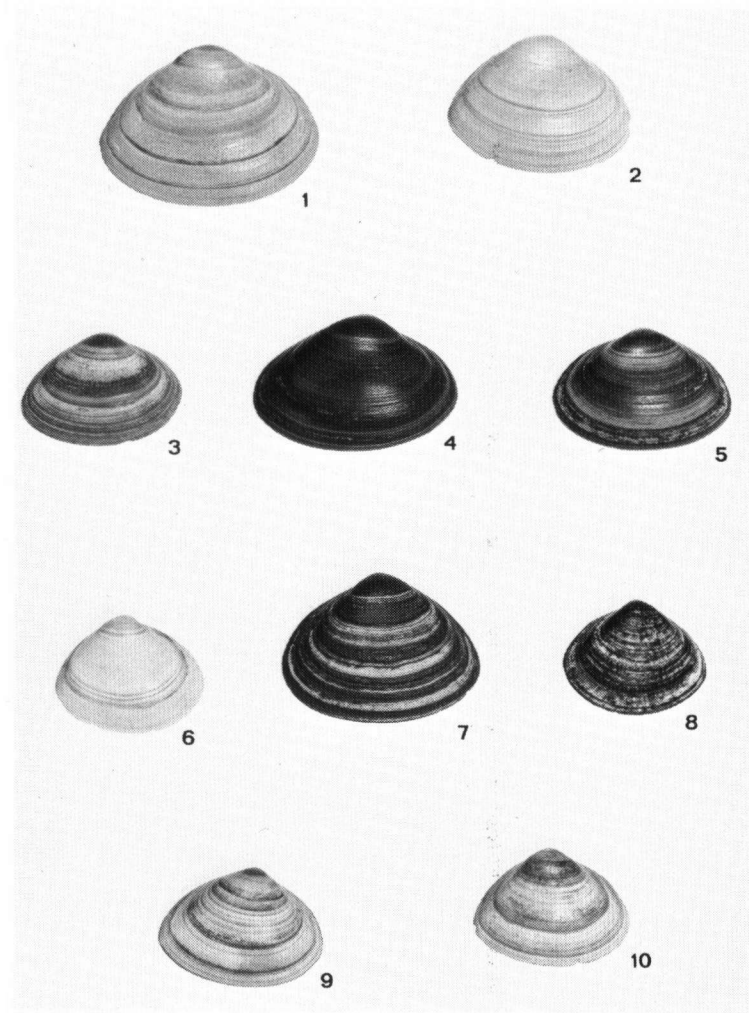
Synonymy.- Locard mentions *Mactra* (= *Spisula*) *elliptica* Brown in his Prodrôme (1886); in 1890 he places it in the synonymy of (his) *Mactra gallina* Da Costa. His description of the latter would fit *Spisula solida* in several respects, e.g.: "dent du sommet petite, courte, à bords peu écartés" (p. 34); var. major... "dépasse 45 millimètres" (p. 34); "rapproché du *M. gracilis*... à sa dent cardinale beaucoup plus petite" (pp. 35, 36); "rapproché du *Mactra solida*, on le distinguera à sa taille encore plus grande" (p. 36).

There seems reason to believe that Locard did not actually know Brown's species and consequently, when he found *Spisula elliptica* in France, described this as a new species, *Mactra gracilis*.

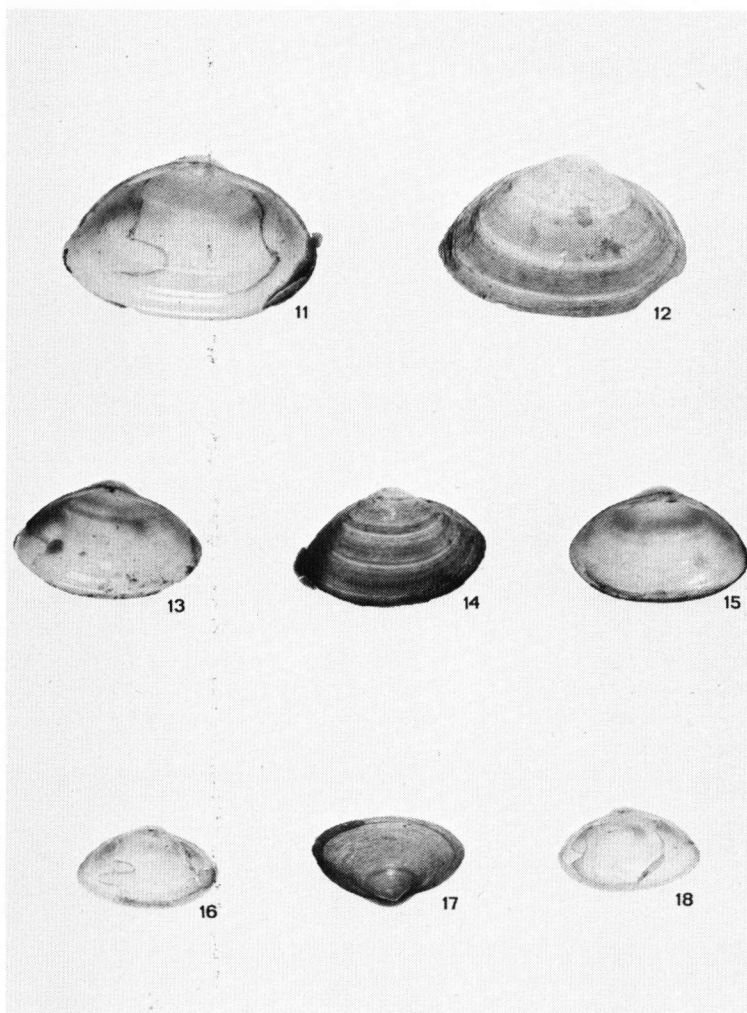
Dautzenberg & Fischer (1912) already consider *M. elliptica* and *M. gracilis* as one and the same species and give an elaborate synonymy. I refer to this work and will give here only a few additional references. Until there is better evidence, we may assume that all northern material refers to *Spisula e. elliptica* (Brown) and all material south of the Channel to *Spisula elliptica gracilis* (Locard). Nordsieck (1969) is the only one to make these combinations, however, without further discussion.

## Additional references

- 1886 Locard, Descr. *Mactra*, Prodr. Malac. Franç.: 401-402, 589-590, *Mactra elliptica* Brown.
- 1890 Locard, Bull. Soc. Malac. France 7: 4-7, pl. 1 fig. 1, "*Mactra gracilis* Locard, 1888 nov. sp."
- 1892 Locard, Coquilles Mar. France: 266, *Mactra gracilis* Locard [refers to: *N. (!) gracilis* Locard, 1091 (!)].
- 1912 Dautzenberg & Fischer, Moll. Hirondelle Pr. Alice Mers du Nord: 495-498, *Mactra (Oxyperas) elliptica* Brown.
- 1917 Hidalgo, Fauna Malac. España: 408, *Mactra elliptica* Brown.
- 1917 Lamy, Rév. Matridae, Journ. de Conchyl. 63: 301-303, *Spisula elliptica* Brown.
- 1931 Nobre, Mollusc. Mar. Portugal: pl. 71 fig. 5, *Mactra elliptica* Brown (not mentioned in text or index).
- 1968 Cadée, Moll. Ría de Arosa, Zool. Verh. Leiden 95: 73 (footnote), 121 (both as *Spisula* sp.), pl. 5, fig. 3, 3a. s.n. *Spisula* sp. cf. *elliptica* (Brown).
- 1968 Glémarec, Pélécyf. Atlant. Franç.: 14, *Spisula elliptica* (Brown) (no localities).



Figs. 1-10. *Spisula e. elliptica* (Brown), Holland, Scheveningen beach (at least partly subfossil), to show variation in outline. 1-2, cream coloured but not quite fresh, no. 1 comparatively large for Holland; 3-5, elongate; 6-10, compressed (nos. 6 and 10 with anterior part slightly longer than posterior do.); 7, subtriangular; 8, almost circular. Collecting dates: 1 - December 1957, 2 - 15.I.1956, 3 and 5 - 13.X.1957, 4 and 8 - 15.X.1966, 6 and 9 - 28.VII.1973, 7 - 1.III.1959, 10 - 1956; all in collection Van Urk. Slightly more than natural size, no. 7 measures 25 mm.



Figs. 11-18. *Spisula elliptica gracilis* (Locard), French material from Locard collection in Muséum National d'Histoire Naturelle, Paris. 11-12, Belle-Isle, type specimen, left and right valves, no. 12 marked on the inside with ink "I fig. 1 M. gracilis", in the other valve (no. 11) the muscle impressions have been indicated with pencil marks; 13-15, Ile d'Yeu (Morbihan), valves depicted as nos. 13 and 14 belong to one individual; 16-18, Le Croisie, valves depicted as nos. 16 and 18 belong to one individual, no. 17 is a complete specimen. Slightly more than natural size, nos. 11-12 actually measure slightly more than 24 mm.

- 1969 Nordsieck, Europ. Meeresmuscheln: 142, fig. 81. 22 [cited: Locard 1891 (1)]; *Spisula elliptica elliptica* (Brown), p. 142, fig. 81.21 (for typical material), *Spisula elliptica gracilis* Locard.
- 1971 Montero Agüera, Moll. Biv. Esp.: 226-227, fig. 121 (much like *S.e. gracilis*), *Spisula (Spisula) elliptica* (Brown).

Notes on the distribution.- *Spisula elliptica* (s.l.) is mentioned by a number of authors to occur south of the Channel, the localities ranging from southern Brittany, France, to the westernmost part of the Mediterranean (Cabo de Gata, east of Almería, Spain, by Hidalgo, 1917: 408, and Montero Agüera, 1971: 227, probably referring to the same material). Dautzenberg & Fischer (1912: 498) are right, however, in writing that the identity of such material can be revealed only after "examen des échantillons que les auteurs ont eu entre les mains". Nordsieck (1969: 142) mentions for *Spisula elliptica gracilis*: "Atl. Lus. Meer. tief. Azoren 748-1262 m". I myself collected many and often remarkably elliptical specimens of *Spisula solida* near Málaga (1974: Benalmadena Costa, Fuengirola, Calaburra-La Cala), Cádiz (1973: Rota, Puerto de Santa María, Cádiz, Barbate, Valdelagrana) and Huelva (1974: Punta Umbría, El Portil, Mazagón), but I failed to find a single valve of *S. elliptica*. My material, however was all collected on the beach and *S. elliptica* is an off-shore species. In the North Sea it is common a few miles off the Dutch coast. Nevertheless fresh specimens, except valves of a few mm, are extremely rare (Van Urk, 1968: 1339), all the material washed ashore being of subfossil, probably Holocene origin.

Material.- France (Locard collection, in Muséum National d'Histoire Naturelle, Paris), Belle-Isle-en-Mer (Morbihan), 1, type specimen of *Mactra gracilis* Locard (figs. 11-12, left and right valve of the same specimen, the right valve bearing the inscription, see above; in the left valve the lines of the muscle scars have been indicated with pencil for this photograph); Ile de Ré, 1 (broken); Ile d'Yeu, 3/2 (figs. 13-15); Golfe de Gascogne, 1/2; Le Croisie, 2 (figs. 16-18).

Spain (Rijksmuseum van Natuurlijke Historie, Leiden): Galicia, Ría de Arosa and Atlantic Ocean at mouth of Ría de Arosa: 4 complete specimens and 167 valves (damaged valves and fragments excluded) from depths ranging between 12 and 85 m; the complete specimens are quite fresh and were probably partly taken alive. Valves varying from quite fresh to brown and worn are present in all stages. Station numbers: 1189 (Centolleira, 12 m, 1962: 1); 1415 (Pta. Figueiriño, Isla Salvora, 50-54 m, 1963: 7/2); 1418 (do. 50 m, 1963: 1 12/2); 1775 (Ocean; Pta. Cornellas, Pen. del Grove, 65 m, 1964: 3/2); 1815 (Ocean; Isla Salvora, 60 m, 1964: 6/2); 1839 (Isla Pombeiro; Pen. del Grove,

60 m, 1964: 11/2 + 1/2, with strongly grooved dorsal areas); 1840 (Ocean; Pta. Canellas, Pen. del Grove, 35-65 m, 1964: 62/2); 1841 (do., 55-65 m, 1964: 2 18/2 ex.); 1900 (Ocean; Salvora, 85 m, 1964: 48/2).

I am indebted to Dr. J.M. Gaillard and Miss A.-M. Testud (Muséum National d'Histoire Naturelle, Paris) for sending me material from the Locard collection, to Dr. A. Figueras (Instituto de Investigaciones Pesqueras, Vigo) for his kind assistance, and to Mr. B. Kieft (Rijksherbarium, Leiden), for the photographs.

### SAMENVATTING

*Spisula elliptica* (Brown) van de Ría de Arosa (Galicië, N.W. Spanje), onderscheidt zich van typisch materiaal van deze soort door zijn gegroefde dorsale vlakken. Het al of niet aanwezig zijn van zulke groeven, die een waaiervormig patroon aan weerszijden van de top vormen, is een belangrijk taxonomisch kenmerk in *Spisula*. *Spisula solida* (L.) en *S. subtruncata* (Da C.) zijn beiden gegroefd, terwijl de gladde dorsale vlakken *S. elliptica* (Brown) vrijwel meteen kenbaar maken ten opzichte van deze twee soorten.

Locard (1890) beschrijft *Mactra gracilis* en geeft daarbij een illustratie, die naar een exemplaar van de Ría de Arosa vervaardigd had kunnen zijn; materiaal uit de collectie Locard in het Muséum National d'Histoire Naturelle te Parijs bleek hiermee geheel overeen te komen.

Daar het al of niet aanwezig zijn van een groevenpatroon een belangrijk taxonomisch kenmerk is in *Spisula* en hier blijkbaar samen gaat met de geografische verspreiding, lijkt het me juist om het zuidelijke materiaal als ondersoort te beschouwen:

*Spisula elliptica gracilis* (Locard, 1890)

Verschildt van *Spisula elliptica* door zijn gegroefde dorsale vlakken; de groeven beginnen zich te ontwikkelen bij een schelpgrootte van ca. 5-7 mm, maar vormen over het algemeen een minder uitgesproken en regelmatig patroon dan in *S. solida* en *S. subtruncata*.

*S. elliptica* (Brown) s.l. wordt door verscheidene auteurs vermeld ten zuiden van het Kanaal. De vindplaatsen reiken daarbij van Zuid-Bretagne tot in het meest westelijke gedeelte van de Middellandse Zee: Cabo de Gata ten oosten van Almería in Spanje (Hidalgo, 1917: 408, en Montero Agüera, 1971: 227). Mogelijk hebben deze laatste twee opgaven betrekking op hetzelfde materiaal.

De verspreiding van *Spisula elliptica* (Brown) in Europa zou hiermee als volgt worden:

*S. e. elliptica* (Brown): Noordelijke IJszee tot het Kanaal.

*S. e. gracilis* (Locard): ten zuiden van het Kanaal tot in het meest westelijke gedeelte van de Middellandse Zee, maar de verspreiding is nog onvoldoende bekend.

### RESUMEN

*Spisula elliptica* (Brown) de la ría de Arosa (Galicia, España) se diferencia del material típico de esta especie por presentar estrías en su área dorsal. La presencia

o ausencia de dichas estrías, que dan a las áreas laterales derecha e izquierda del umbo un aspecto de abanico, son un carácter esencial del género *Spisula*. Tanto *sólida* (L.) como *S. subtruncata* (Da C.) poseen bien marcadas dichas estrías, mientras que *S. elliptica* se distingue casi inmediatamente de esas dos especies por su área dorsal lisa.

Locard, 1890, da la descripción de *Mactra gracilis* acompañada por una ilustración que podría haber sido hecha con ejemplares de la ría de Arosa, y el material de la colección de Locard del Muséum National d'Histoire Naturelle de París ha demostrado ser idéntico al mismo.

Puesto que la presencia o ausencia de estrías en el área dorsal es de tal importancia y aparentemente aquí está relacionado con la distribución geográfica, al material meridional le damos aquí una categoría subespecífica:

*Spisula elliptica gracilis* (Locard, 1890)

Difiere de *Spisula elliptica* por su área dorsal estriada; las estrías aparecen cuando la concha alcanza una talla de 5-7 mm, pero de ordinario tienen un aspecto en conjunto menos regular y pronunciado que en *Spisula solida* y *S. subtruncata*.

*S. elliptica* s.l. ha sido mencionada por bastantes autores al sur del Canal. Las localidades citadas van desde el sur de Bretaña, en Francia, hasta la parte más occidental del Mediterráneo: Cabo de Gata, al este de Almería, en España (Hidalgo, 1917: 408, y Montero Agüera, 1971: 227, refiriéndose probablemente ambos al mismo material).

La distribución en Europa de *Spisula elliptica* quedaría, pues, como sigue:

*S. e. elliptica* (Brown): Mar Artico - Canal.

*S. e. gracilis* (Locard): probablemente desde el sur del Canal hasta la parte más occidental del Mediterráneo; pero su distribución está imperfectamente conocida hasta el momento.

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